



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/580,446	05/23/2006	Yvonne Armitage	BT/3-22350/A/PCT	4199
324	7590	05/27/2009	EXAMINER	
JoAnn Villamizar			AFREMOVA, VERA	
Ciba Corporation/Patent Department				
540 White Plains Road			ART UNIT	PAPER NUMBER
P.O. Box 2005				1657
Tarrytown, NY 10591				
			NOTIFICATION DATE	DELIVERY MODE
			05/27/2009	ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

andrea.dececchis@ciba.com  
deborah.pinori@ciba.com  
sonny.nkansa@basf.com

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/580,446	ARMITAGE ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Vera Afremova	1657	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

1) Responsive to communication(s) filed on 09 March 2009.

2a) This action is **FINAL**.                            2b) This action is non-final.

3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

4) Claim(s) 1 and 5-11 is/are pending in the application.

4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.

5) Claim(s) \_\_\_\_\_ is/are allowed.

6) Claim(s) 1 and 5-11 is/are rejected.

7) Claim(s) \_\_\_\_\_ is/are objected to.

8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

9) The specification is objected to by the Examiner.

10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) All    b) Some \* c) None of:

1. Certified copies of the priority documents have been received.
2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

1) Notice of References Cited (PTO-892)

2) Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.

4) Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.

5) Notice of Informal Patent Application

6) Other: \_\_\_\_\_.

**DETAILED ACTION**

***Continued Examination Under 37 CFR 1.114***

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 3/09/2009 has been entered.

Claims 1 and 5-11 as amended (1/28/2009) are pending and under examination.

***Deposit***

Deposit requirement for the strain *Rhodococcus rhodochrous* NCIMB 41164 has been met in papers filed 9/04/208.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 5-7, 9 and 11 as amended remain/are rejected under 35 U.S.C. 102(b) as being anticipated by US 5,705,382 (Endo et al).

Claims are directed to a method of producing an amide from the corresponding nitrile wherein the method comprises steps i) providing a microorganism capable of producing a nitrile hydratase biocatalyst, ii) culturing the microorganism in a growth medium, iii) storing the microorganism as “non-actively growing culture” in water with the growth medium without

separation from the growth medium, iv) contacting the nitrile with the microorganism in an aqueous medium and thereby converting the nitrile to the amide. Some claims are further drawn to producing amide such as ethylenically unsaturated amide or acrylamide. Some claims are further drawn to the use of growth and storage media that comprise urea. Some claims are further drawn to the use of storage temperature being above the freezing point of the storage medium. Some claims are further drawn to the use of microorganism belonging to the genus of *Rhodococcus* or to the species of *Rhodococcus rhodochrous*.

US 5,705,382 (Endo et al) discloses a method of producing an amide from the corresponding nitrile (entire document) wherein the method comprises steps providing a microorganism belonging to the species of *Rhodococcus rhodochrous* that is capable of producing a nitrile hydratase biocatalyst, step of culturing and/or storing the microorganism in a growth medium with urea at temperature above freezing point or at the very least at room temperature (col.7, lines 59-62) and contacting the nitrile with the microorganism in an aqueous medium, thereby, converting the nitrile to the amide (col. 8, lines 18-30). The claimed “storing” step recites an intended effect of decreasing cell growth and metabolism but it is not limited by any special culture maintenance conditions except the use of components of the same growth medium. It is well known that after initial exponential growth phase the rate of cell growth is decreased and the cell culture becomes “non-actively growing culture” during stationary phase.

Thus, the cited method of US 5,705,382 (Endo et al) is still considered to anticipate the claimed invention.

Claims 1, 5-9 and 11 as amended are rejected under 35 U.S.C. 102(b) as being anticipated by US 5,089,411 (Yamada et al).

Claims are directed to a method of producing an amide from the corresponding nitrile wherein the method comprises steps i) providing a microorganism capable of producing a nitrile hydratase biocatalyst, ii) culturing the microorganism in a growth medium, iii) storing the microorganism as “non-actively growing culture” in water with the growth medium without separation from the growth medium, iv) contacting the nitrile with the microorganism in an aqueous medium and thereby converting the nitrile to the amide. Some claims are further drawn to producing amide such as such as ethylenically unsaturated amide or acrylamide. Some claims are further drawn to the use of growth and storage media that comprise urea. Some claims are further drawn to the use of storage temperature being above the freezing point of the storage medium for at least 2 days. Some claims are further drawn to the use of microorganism belonging to the genus of *Rhodococcus* or to the species of *Rhodococcus rhodochrous*.

US 5,089,411 (Yamada et al) discloses a method of producing an amide from the corresponding nitrile (entire document) wherein the method comprises steps providing a microorganism belonging to the species of *Rhodococcus rhodochrous* that is capable of producing a nitrile hydratase biocatalyst (col. 4, lines 65-69), step of culturing and/or storing the microorganism in a growth medium with urea at temperature above freezing point for at least 2 days or 120 hours (col. 5, lines 3-10) and contacting the nitrile with the microorganism in an aqueous medium, thereby, converting the nitrile to the amide (col. 6, lines 1-15; table 1 at col.7). The claimed “storing” step recites an intended effect of decreasing cell growth and metabolism but it is not limited by any special culture maintenance conditions except the use of components

of the same growth medium. It is well known that after initial exponential growth phase the rate of cell growth is decreased and the cell culture becomes “non-actively growing culture” during stationary phase. Thus, the cited method f by US 5,089,411 (Yamada et al) is considered to anticipate the claimed invention.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 5-11 as amended are rejected under 35 U.S.C. 103(a) as being unpatentable over US 5,705,382 (Endo et al), US 5,089,411 (Yamada et al), Nagasawa et al (IDS reference. Pure and Appl. Chem. 1996, Vol. 67, No. 7, pages 1241-1256) and US 6,395,467 (Fahy et al).

Claims are directed to a method of producing an amide from the corresponding nitrile wherein the method comprises steps i) providing a microorganism capable of producing a nitrile hydratase biocatalyst, ii) culturing the microorganism in a growth medium, iii) storing the microorganism as “non-actively growing culture” in water with the growth medium without separation from the growth medium, iv) contacting the nitrile with the microorganism in an aqueous medium and thereby converting the nitrile to the amide. Some claims are further drawn to producing amide such as such as ethylenically unsaturated amide or acrylamide. Some claims are further drawn to the use of growth and storage media that comprise urea. Some claims are further drawn to the use of storage temperature being above the freezing point of the storage medium for at least 2 days. Some claims are further drawn to the use of microorganism

belonging to the genus of *Rhodococcus* or to the species of *Rhodococcus rhodochrous*. Some claims are further drawn to the use of a particular strain *Rhodococcus rhodochrous* NCIMB 41164.

The cited patents US 5,705,382 (Endo et al) and US 5,089,411 (Yamada et al) are relied upon as explained above for the disclosure of a method for producing amides from the corresponding nitriles wherein the method comprises steps culturing or maintaining microorganisms belonging to the genus of *Rhodococcus* including representatives of the species of *Rhodococcus rhodochrous* in an aqueous medium comprising urea and converting nitriles to amides by using enzymatic activity of the microbial cells after prolonged storage or maintenance at temperature above freezing point.

The cited patents are lacking particular disclosure about the use of specific strain *Rhodococcus rhodochrous* NCIMB 41164. However, they disclose another strain *Rhodococcus rhodochrous* such as strain J-1, for example: see US 5,705,382 col. 7, line 59, that is capable for producing both acrylamide (col. 8, line 27) and methacrylamide (see Nagasawa et al. at page 1248, lines 8-15) and which enzymatic activity is induced by the presence of urea.

Although in the particular example US 5,705,382 describes that *Rhodococcus rhodochrous* strain J-1 is immobilized as intended for preservation before production of amides, the cited patent US 5,705,382 clearly teaches that microbial cells having nitrile hydratase including representatives of the genus *Rhodococcus* activity can be stored either as free cell suspensions or as immobilized cells (col. 1, lines 54-65) in the method for producing amide (examples 4 and 7).

Both cited patents US 5,705,382 and US 5,089,411 (Yamada et al) clearly also teaches incorporation of urea in the culture medium for *Rhodococcus rhodochrous*. Further, US 5,089,411 (Yamada et al) explicitly teaches that incorporation of urea and its derivates increases enzymatic activity of *Rhodococcus rhodochrous* (entire document including abstract and col. 4, lines 10-35) without relative increase in cell concentration (table 1).

In addition, US 6,395,467 (Fahy et al) is relied upon to demonstrate that urea is a known ingredient of generic preservation solution intended for storing biological materials, for example: see abstract.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the claimed invention was made to use urea in the culture and/or storage media of *Rhodococcus rhodochrous* having nitrile hydratase activity with a reasonable expectation of success in converting nitriles to corresponding amides because the prior art teaches that incorporation of urea and its derivates increases enzymatic activity of *Rhodococcus rhodochrous*. Thus, the claimed invention as a whole was clearly *prima facie* obvious, especially in the absence of evidence to the contrary.

The substitution of one strain for another microbial strain is considered to be substitution of equivalents in the instant case wherein the prior strain J-1 belongs to the same species and capable to produce amide after storage as the claimed strain NCIMB 41164. Thus, the claimed invention as a whole was clearly *prima facie* obvious, especially in the absence of evidence to the contrary.

The claimed subject matter fails to patentably distinguish over the state art as represented by the cited references. Therefore, the claims are properly rejected under 35 USC § 103.

***Response to Arguments***

Applicant's arguments filed 1/28/2009 have been fully considered but they are not persuasive.

With regard to the claim rejection under 35 U.S.C. 102(b) as being anticipated by US 5,705,382 (Endo et al) applicants' main argument is that the cited method encompasses collecting cells by centrifugation after culturing step to remove growth medium (response page 6, par. 1). This argument is not found persuasive because the presently claimed method requires exclusion of cell separation from the growth medium solely before the step of "storing". The claimed method does not require exclusion of cell separation before the step of "converting" nitrile to the amide. In the cited method the cells are separated from the growth medium components only before the step of "converting" nitrile to the amide. Moreover, the claimed "storing" step recites an intended effect of decreasing cell growth and metabolism but it is not limited by any special culture maintenance conditions except the use of components of the same growth medium. Thus, the cited method is still considered to anticipate the claimed invention.

With regard to the claim rejection under 35 U.S.C. 103 applicants' argument that the cited patents teach removal of growth medium components by centrifugation and washing before storing cells. This argument does not appear to have persuasive grounds because it is very well known that microbial cells could be stored at low temperature in the same medium in which they were grown. The claimed invention is generic with regard to storage conditions (claim 1, for example). Although the claim 6 is directed to the use of urea, the use of urea in the specially designed storage media have been known in the prior art. Thus, the teaching of the cited references taken as a whole cannot be distinguished from the invention as presently claimed.

With respect to the claim 10, drawn to the use of a specific strain NCIB 41164, it is noted that the substitution of one strain for another microbial strain is considered to be substitution of equivalents in the instant case wherein the prior strain J-1 belongs to the same species and capable to produce amide after storage as the claimed strain NCIMB 41164. Thus, the claimed invention as a whole was clearly *prima facie* obvious, especially in the absence of evidence to the contrary.

No claims are allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Vera Afremova whose telephone number is (571) 272-0914. The examiner can normally be reached from Monday to Friday from 9.30 am to 6.00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jon P. Weber, can be reached at (571) 272-0925.

The fax phone number for the TC 1600 where this application or proceeding is assigned is (571) 273-8300.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology center 1600, telephone number is (571) 272-1600.

Vera Afremova

May 20, 2000

/Vera Afremova/  
Primary Examiner, Art Unit 1657